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भारतीय मानक
पोतनिर्माण — डेरिक गूजनेक के लिए बेयरिंग — असेम्बली
तथा संघटक — विशिष्टि
(पहला पुनरीक्षण)

Indian Standard
SHIPBUILDING — BEARINGS FOR DERRICK
GOOSENECK — ASSEMBLIES AND COMPONENTS —
SPECIFICATION
(*First Revision*)

ICS 47.020.40

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Shipbuilding Sectional Committee had been approved by the Transport Engineering Division Council.

This amalgamated revision of IS 4337 : 1963 and IS 5221 : 1969 is based on ISO 6045 : 1987 'Shipbuilding and marine structures — Bearings for derrick goosenecks — Assemblies and components'.

The composition of the committee responsible for the preparation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SHIPBUILDING — BEARINGS FOR DERRICK GOOSENECK — ASSEMBLIES AND COMPONENTS — SPECIFICATION (*First Revision*)

1 SCOPE

1.1 This standard specifies the types of assemblies, material and dimensions for derrick boom gooseneck bearings of conventional derrick design to be fitted on board ships for cargo handling purposes.

1.2 It does not apply to special types of derricks.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
919 (Part 1) : 1993	ISO systems of limits and fits : Part 1 Bases of tolerances, deviations and fits (<i>second revision</i>)
2004 : 1991	Carbon steel forgings for general engineering purposes (<i>third revision</i>)
2062 : 1992	Steel for general structural purposes (<i>fourth revision</i>)
2985 : 1990	Steel castings for ships structure (<i>third revision</i>)
3039 : 1988	Structural steel for construction of hulls for ships (<i>second revision</i>)
3261 : 1980	Carbon steel forgings for ship- building industry (<i>first revision</i>)
4478 : 1992	Shipbuilding — Derricks rigs — Glossary of terms (<i>first revision</i>)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 4478 : 1992 shall apply.

4 NOMINAL SIZE

4.1 The nominal size of a derrick boom gooseneck bearing assembly and of a gooseneck is a numerical value without unit for reference and ordering purposes; it is derived from the maximum thrust in the boom, in kilonewtons.

4.2 The nominal size of a cargo runner lead block holder is a numerical value without unit for reference and ordering purposes; it is derived from the maximum load exerted by the lead block and calculated by the derrick assembly diagram of forces, in kilonewtons.

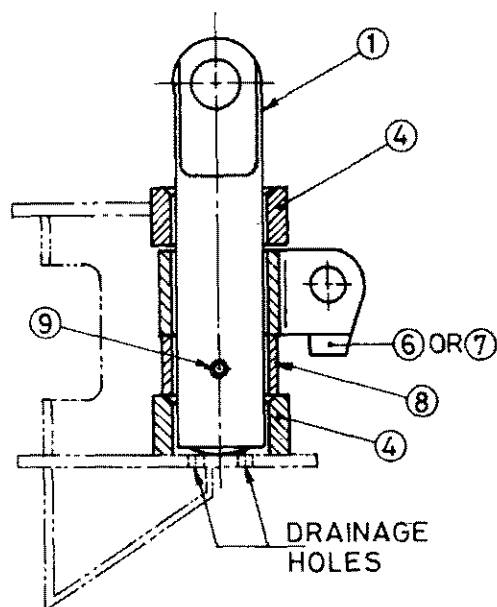
5 DERRICK GOOSENECK BEARING ASSEMBLIES

5.1 Types

The assemblies are divided into three types as specified in Table 1 and illustrated in Fig. 1, 2 and 3.

Table 1 Types of Assemblies

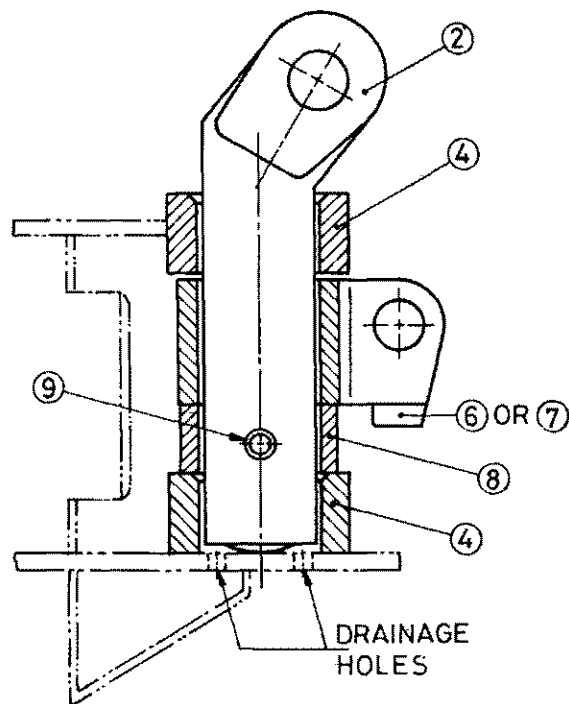
Type		Range of Thrust in the Boom, kN
Code Letter	Description	
A	With straight gooseneck pin	16 to 160
B	With cranked gooseneck pin	25 to 400
C	With straight gooseneck pin	200 to 1 000



NOTE — Positions of lead block holder (component No. 6 or 7) and retaining ring (component No. 8) may be interchanged.

FIG. 1 ILLUSTRATION OF TYPE A ASSEMBLY

5.2 Components for derrick boom goosenecks bearing assemblies are listed in Table 2, where the serial number refers to Fig. 1, 2 and 3. Assemblies of Type A or B may be fitted either with a cargo runner lead block holder with single eye connection or with a forked connection.



NOTE — Positions of lead block holder (component No. 6 or 7) and retaining ring (component No. 8) may be interchanged.

FIG. 2 ILLUSTRATION OF TYPE B ASSEMBLY

Table 2 List of Components

Serial No.	Number of Component for Assembly Type			Denomination	Code Letter	Details
	A	B	C			
1	1	—	—	Gooseneck pin	GA	See 6.3.1
2	—	1	—	Gooseneck pin	GB	See 6.3.2
3	—	—	1	Gooseneck pin	GC	See 6.3.3
4	2	2	1	Bearing eye	D	See 6.4.1
5	—	—	1	Bearing eye	E	See 6.4.2
6 ¹⁾	1	—	—	Lead block holder	F	See 6.5.1
7 ²⁾	—	1	—	Lead block holder	H	See 6.5.2
8	1	1	1	Retaining ring	J	See 6.6.1
9	1	1	1	Retaining pin	K	See 6.6.2

¹⁾ Serial No. 6 for lead block with a fork connection.
²⁾ Serial No. 7 for lead block with single eye connection.

5.3 Nominal Sizes and Maximum Loads

A summary of gooseneck bearing assemblies listed

according to type, nominal size and maximum loads for block holders is given in Table 3.

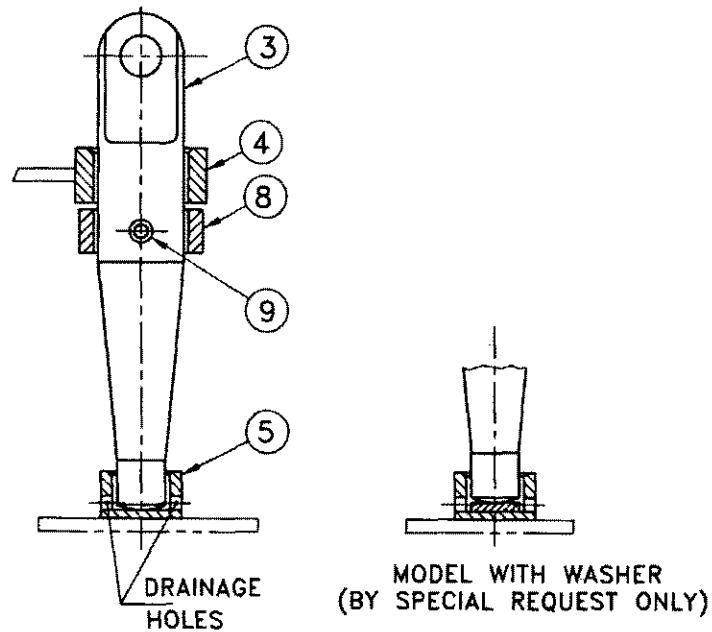


FIG. 3 ILLUSTRATION OF TYPE C ASSEMBLY

Table 3 Correlation Between Assembly Nominal Sizes and Maximum Loads on the Assemblies

Nominal Size of Assembly Type			Thrust in the Boom, kN <i>Max</i>	Lead Block Holder for Type							
				A				B			
A	B	C		Load Exerted by the Lead Block, kN <i>Max</i>							
1.6	—	—	16	20					—		
2	—	—	20	20					—		
2.5	2.5	—	25	20				20			
3	3	—	32	20	40			20			
4	4	—	40	20	40			20	40		
5	5	—	50	20	40	63		20	40		
6	6	—	63	40	63			20	40	63	
8	8	—	80	40	63	100		40	63		
10	10	—	100	40	63	100		40	63	100	
12	12	—	125	40	63	100	160	40	63	100	
16	16	—	160	63	100	160		40	63	100	160
—	20	20	200		—			63	100	160	
—	25	25	250		—			63	100	160	
—	32	32	320		—			63	100	160	
—	40	40	400		—			63	100	160	
—	—	50	500		—				—		
—	—	63	630		—				—		
—	—	80	800		—				—		
—	—	100	1 000		—				—		

5.4 Installation of Bearing Eyes

For the disposition of bearing eyes, see Fig. 1 to 3 and

Table 2. For installation dimensions of the distance between upper and lower bearing eye, see Fig. 4 and Table 4.

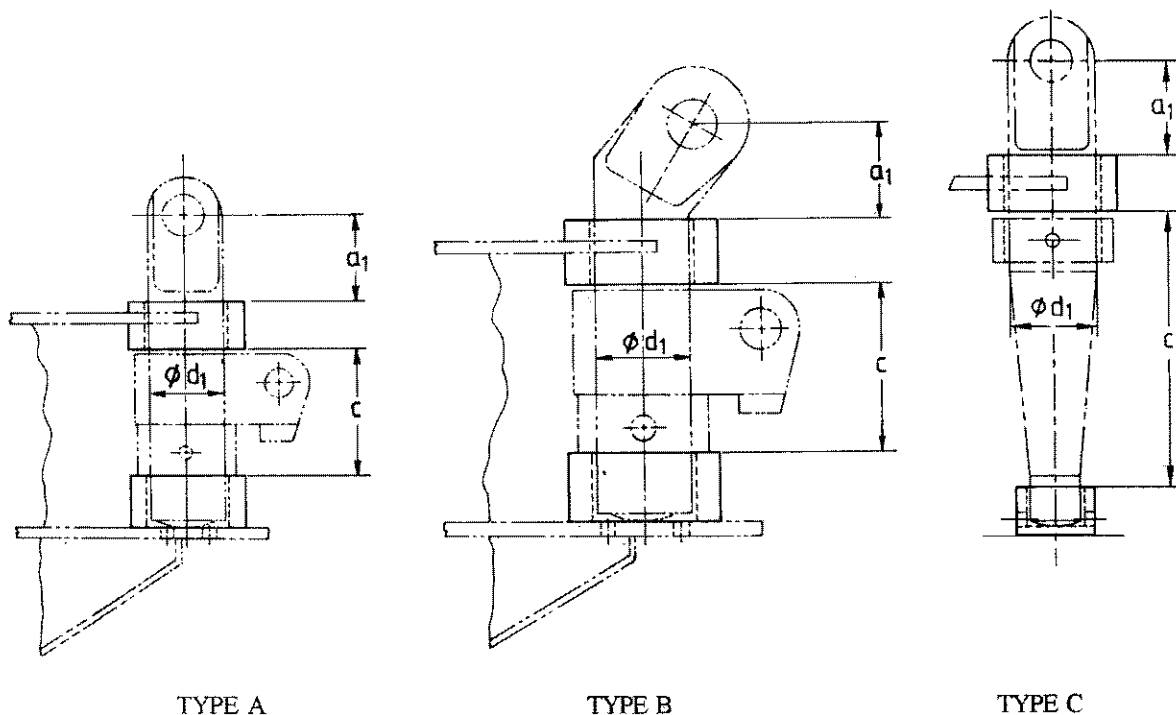


FIG. 4 POSITIONING OF BEARING EYES

Table 4 Bearing Eye Installation Dimensions

All dimensions in millimetres.

Nominal Size	Gooseneck Bearing Assembly								
	Type A			Type B			Type C		
	a_1	c	d_1	a_1	c	d_1	a_1	c	d_1
1.6	60	95	50	—	—	—	—	—	—
2	50	95	50	—	—	—	—	—	—
2.5	60	95	60	60	95	55	—	—	—
3	85	120	70	65	95	60	—	—	—
4	70	120	70	70	120	65	—	—	—
5	85	140	80	80	120	70	—	—	—
6	100	140	90	85	140	80	—	—	—
8	105	175	100	90	140	90	—	—	—
10	120	175	110	100	175	100	—	—	—
12	125	215	120	105	175	110	—	—	—
16	150	215	140	110	215	120	—	—	—
20	—	—	—	115	215	130	170	480	155
25	—	—	—	125	215	140	200	540	170
32	—	—	—	140	235	155	210	570	190
40	—	—	—	155	235	170	220	570	190
50	—	—	—	—	—	—	220	600	200
63	—	—	—	—	—	—	245	675	225
80	—	—	—	—	—	—	275	750	250
100	—	—	—	—	—	—	290	825	275

6 DIMENSIONS

6.1 For components listed in Table 2, main dimensions only are given in Tables 5 to 13.

6.2 No dimensions are given for lubrication devices, for the securing pin at both ends of the retaining pin, nor for the washer which may be positioned under the gooseneck pin of assembly Type C. These details are left to the manufacturer's option.

6.3 Gooseneck Pins

6.3.1 Form GA, Straight Gooseneck Pin for Assembly Type A

See Fig. 5 and Table 5.

6.3.2 Form GB Cranked Gooseneck Pin for Assembly Type B

See Fig. 6 and Table 6.

6.3.3 Form GC, Straight Gooseneck Pin for Assembly Type C

See Fig. 7 and Table 7.

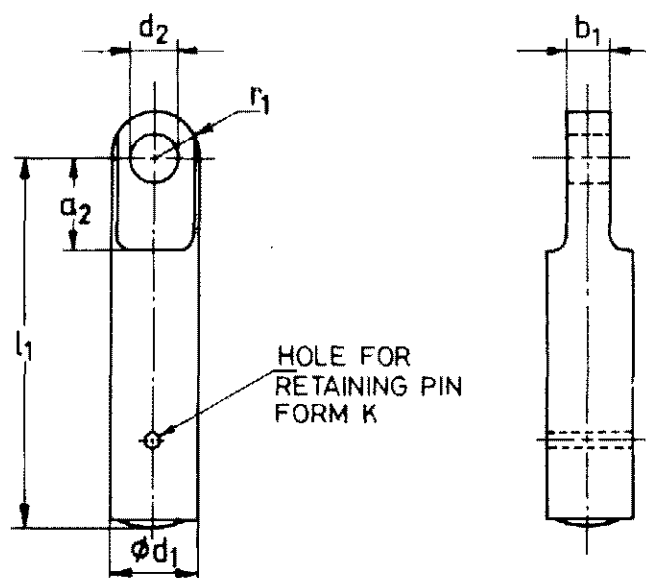


FIG. 5 SHAPE OF GOOSENECK PIN, FORM GA

Table 5 Dimensions of Gooseneck Pin, Form GA

All dimensions in millimetres.

Nominal Size	a_2	b_1	d_1	d_2	l_1	r_1
1.6	55	26	50	24	245	25
2	45	28	50	26	235	25
2.5	54	30	60	29	255	30
3	79	33	70	32	325	35
4	64	36	70	35	310	35
5	77	40	80	41	345	40
6	92	45	90	44	380	45
8	97	50	100	47	420	50
10	110	57	110	54	455	55
12	115	64	120	58	500	60
16	138	73	140	67	545	70

Table 6 Dimensions of Gooseneck Pin, Form GB

All dimensions in millimetres.

Nominal Size	a_2	b_1	d_1	d_2	e_1	l_1	r_1
2.5	55	30	55	29	35	245	30
3	60	33	60	32	38	260	32
4	65	36	65	35	40	290	35
5	75	40	70	41	46	320	42
6	80	45	80	44	49	345	45
8	85	50	90	47	52	370	48
10	95	57	100	54	58	415	55
12	100	64	110	58	61	440	60
16	105	73	120	67	64	485	68
20	110	82	130	75	67	510	75
25	115	92	140	79	72	520	80
32	125	102	155	83	78	575	85
40	140	112	170	93	85	590	95

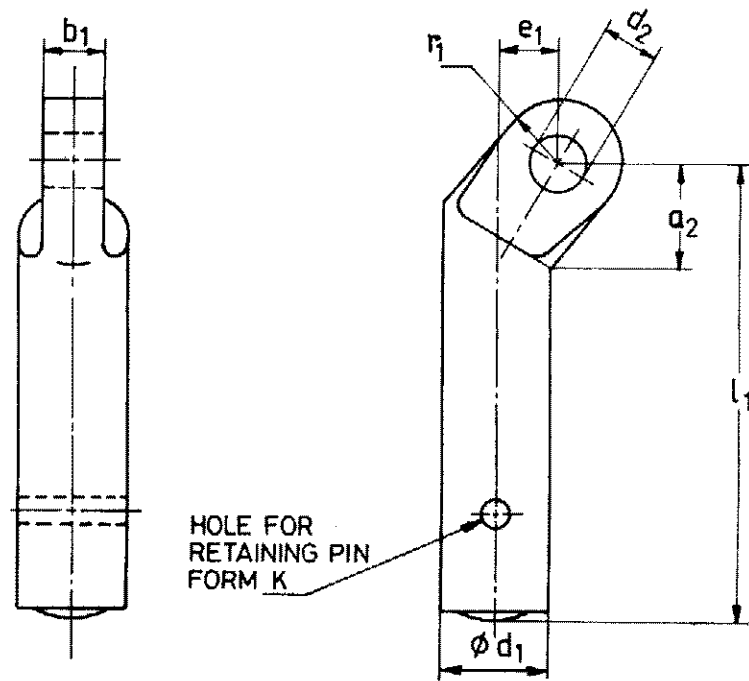


FIG. 6 SHAPE OF GOOSENECK PIN, FORM GB

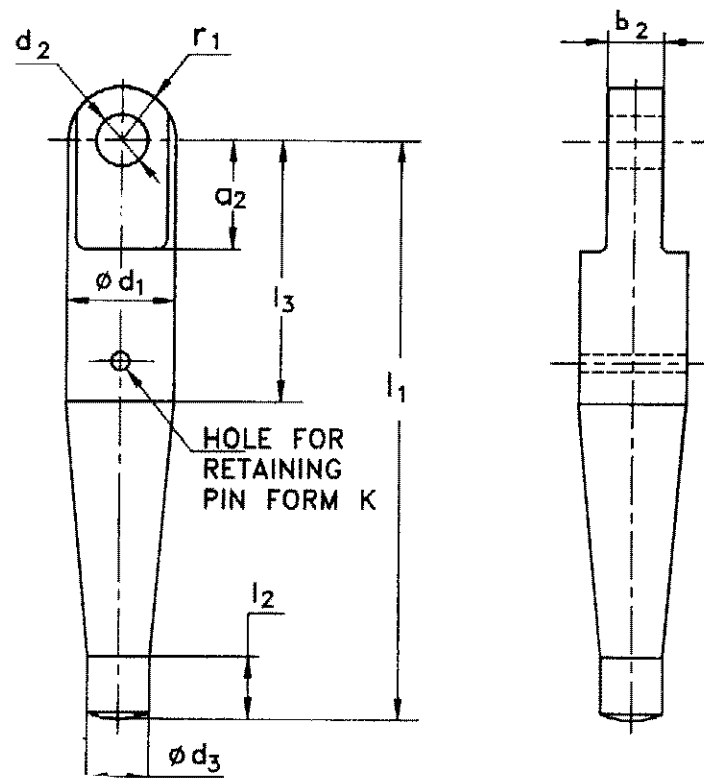


FIG. 7 SHAPE OF GOOSENECK PIN, FORM GC

6.4 Bearing Eye**6.4.2 Form E, Open Eye****6.4.1 Form D, Open Eye**

See Fig. 9 and Table 9.

See Fig. 8 and Table 8.

Table 7 Dimensions of Gooseneck Pin, Form GC

(Clause 6.3.3; and Fig. 7)

All dimensions in millimetres.

Nominal Size	a_2	b_1	d_1	d_2	d_3	$l_1^{1)}$	l_2	l_3	r_1
20	158	82	155	75	90	820	80	375	78
25	185	92	170	79	90	910	80	407	85
32	195	102	190	83	100	950	80	417	95
40	205	112	190	93	100	960	80	427	95
50	200	124	200	103	110	1 010	90	442	100
63	225	140	225	113	110	1 120	90	477	113
80	250	150	250	129	120	1 235	95	522	125
100	265	160	275	144	120	1 335	95	547	138

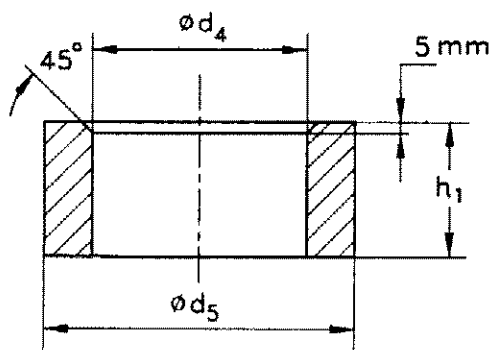
¹⁾ If a washer is used, the length l_1 shall be adjusted accordingly (see Fig. 3).

FIG. 8 SHAPE OF BEARING EYE, FORM D

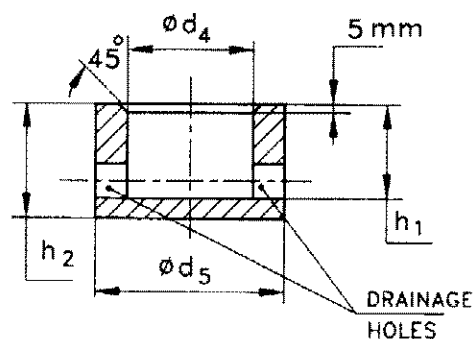


FIG. 9 SHAPE OF BEARING EYE, FORM E

Table 8 Dimensions of Bearing Eye, Form D

(Clause 6.4.1; and Fig. 8.1)

All dimensions in millimetres.

Gooseneck Diameter Type d_1	d_4	d_5	h_1	Nominal Size of Bearing Assembly Type		
				A	B	C
50	52	85	45	1.6 and 2	—	—
55	57	90	45	—	2.5	—
60	62	100	50	2.5	3	—
65	68	110	50	—	4	—
70	73	120	60	3 and 4	5	—
80	83	130	60	5	6	—
90	93	140	70	6	8	—
100	103	160	70	8	10	—
110	113	170	80	10	12	—
120	123	190	80	12	16	—
130	134	200	90	—	20	—
140	144	210	90	16	25	—
155	159	230	100	—	32	20
170	174	250	100	—	40	25
190	194	270	100	—	—	32 and 40
200	204	285	110	—	—	50
225	230	315	120	—	—	63
250	255	350	130	—	—	80
275	280	380	140	—	—	100

Table 9 Dimensions of Bearing Eye, Form E

(Clause 6.4.2; and Fig. 9)

All dimensions in millimetres.

Gooseneck Diameter $d_3^{(1)}$	d_4	d_5	h_1	h_2	Nominal Size of Bearing Assembly Type C
90	93	140	70	85	20 and 25
100	103	160	70	85	32 and 40
110	113	170	80	100	50 and 63
120	123	190	80	100	80 and 100

⁽¹⁾ Diameter at the lower end of the gooseneck form GC.**6.5 Cargo Runner Lead Block Holders****6.5.1 Form E, Holder with a Single Eye**

See Fig. 10 and Table 10.

Table 10 Dimensions of Lead Block Holder, Form F*(Clause 6.5.1 and Fig. 10)*

All dimensions in millimetres

Gouseneck Diameter d_1	Lead Block Holder		b_1	d_4	d_6	d_7	e_2	g	h_3	h_4	r_2	Nominal Size of Bearing Assembly Type		
	Nominal Size	Load Exerted by the Block kN <i>Max</i>										A	B	
50 55 60	2	20	22	52 57 62	80 85 90	24	75 78 80	55 60 62	50	75	25	1.6 and 2 — 2.5	— 2.5 3	
65	2	20	22	68	95	24	83	65	65	75	25	—	4	
	4	40	30		100	33	95			100	32.5			
70	2	20	22	73	100	24	85	70	65	75	25	3 and 4	5	
	4	40	30		105	33	98			100	32.5			
80	2	20	22	83	100	24	90	85	85	85	25	5	6	
	4	40	30		115	33	102			100	32.5			
	6	63	40		120	42	115			130	42.5			
90	4	40	30	93	125	33	108	80	85	100	32.5	6	8	
	6	63	40		130	42	120			130	42.5			
100	4	40	30	103	135	33	112	—	110	—	32.5	8	10	
	6	63	40		140	42	130			130	42.5			
	10	100	50		148	52	145			95	165			55
110	4	40	30	113	145	33	118	—	110	—	32.5	10	12	
	6	63	40		150	42	135			130	42.5			
	10	100	50		158	52	150			100	165			55
120	4	40	30	123	155	33	122	—	130	—	32.5	12	16	
	6	63	40		160	42	140			—	42.5			
	10	100	50		170	52	155			110	165			55
	16	160	60		180	66	175			110	195			65
130	6	63	40	134	170	42	145	—	130	—	42.5	—	20	
	10	100	50		180	52	165			115	165			55
	16	160	60		190	66	185			115	195			65
140	6	63	40	144	180	42	150	—	130	—	42.5	16	25	
	10	100	50		190	52	170			120	165			55
	16	160	60		200	66	190			120	195			65
155	6	63	40	159	195	42	160	—	150	—	42.5	—	32	
	10	100	50		205	52	178			130	165			55
	16	160	60		215	66	198			130	195			65
170	6	63	40	174	210	42	170	—	150	—	42.5	—	40	
	10	100	50		220	52	185			145	165			55
	16	160	60		230	66	205			145	195			65

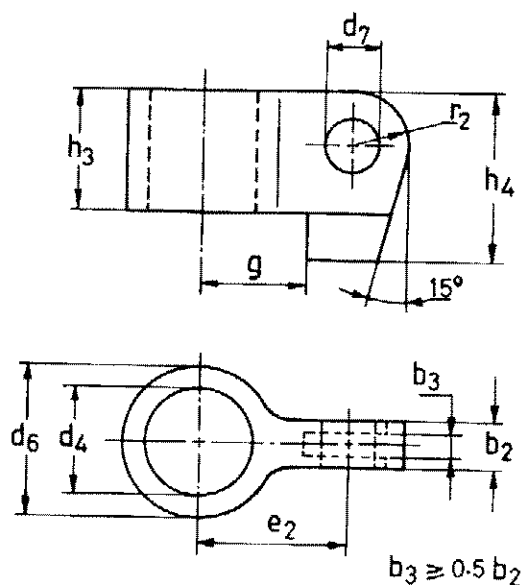


FIG. 10 SHAPE OF LEAD BLOCK HOLDER, FORM F

6.5.2 Form H, Holder with Fork

See Fig. 11 and Table 11.

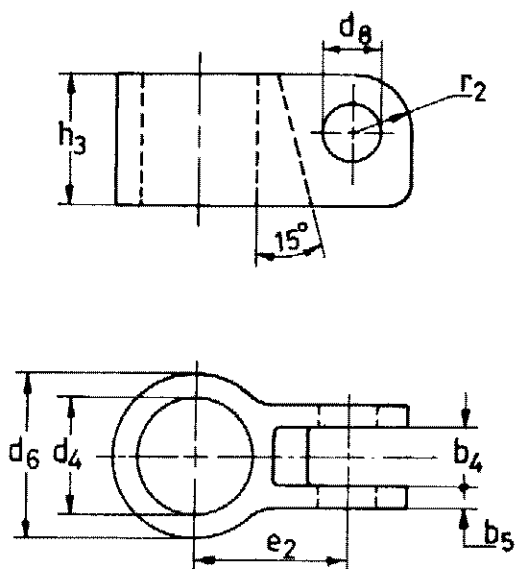


FIG. 11 SHAPE OF LEAD BLOCK HOLDER, FORM H

6.6 Retaining Components

6.6.1 Form J, Retaining Ring

See Fig. 12 and Table 12.

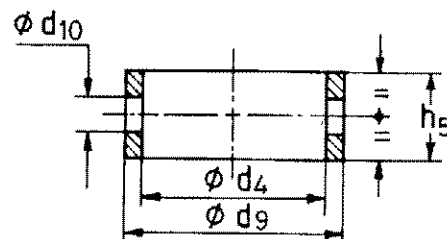


FIG. 12 SHAPE OF RETAINING RING, FORM J

6.6.2 Form K, Retaining Pin

See Fig. 13 and Table 13.

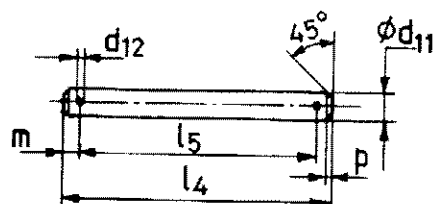


FIG. 13 SHAPE OF RETAINING PIN, FORM K

6.7 Tolerances

Dimensional tolerances on the components shall correspond to the standard tolerance grade IT 14 of IS 919 (Part 1) : 1993.

7 MATERIAL

Component	Material
Straight Gooseneck pin and cranked goose	Class 4 forged steel conforming to IS 2004 : 1991 or IS 3261 : 1980 Neck pin with a minimum tensile strength of 42 kgf/mm ²
Gooseneck bearings	Cast steel or forged steel conforming to IS 2985 : 1990 or IS 3261 : 1980
Gooseneck bearing plate	Structural steel conforming to IS 2062 : 1992 or IS 3039 : 1988
Gooseneck lead block holder	Forged steel conforming to IS 2004 : 1991 or IS 3261 : 1980
Lug of derrick heel	Structural steel conforming to IS 2062 : 1992 or IS 3039 : 1988
Gooseneck pin	Forged steel conforming to IS 2004 : 1991 or IS 3261 : 1980

Table 11 Dimensions of Lead Block Holder, Form H

(Clause 6.5.2 and Fig. 11)

All dimensions in millimetres.

Gooseneck Diameter d_1	Lead Block Holder		b_4	b_5	d_4	d_6	d_8	e_2	h_3	r_2	Nominal Size of Bearing Assembly Type	
	Nominal Size	Load Exerted by the Block kN M_{ax}									A	B
50 55 60	2	20	26	12	52 57 62	80 85 90	23	75 78 80	50	25	1.6 and 2 — 2.5	— 2.5 3
65	2	20	26	12	68	95	23	83	65	25	—	4
	4	40	35	15		100	31	95		32.5		
70	2	20	26	12	73	100	23	85	65	25	3 and 4	5
	4	40	35	15		105	31	98		32.5		
80	2	20	26	12	83	110	23	90	85	25	5	6
	4	40	35	15		115	31	102		32.5		
	6	63	45	20		120	40	115		42.5		
90	4	40	35	15	93	125	31	108	85	32.5	6	8
	6	63	45	20		130	40	120		42.5		
100	4	40	35	15	103	135	31	112	110	32.5	8	10
	6	63	45	20		140	40	130		42.5		
	10	100	58	26		148	50	145		55		
110	4	40	35	15	113	145	31	118	110	32.5	10	12
	6	63	45	20		150	40	135		42.5		
	10	100	58	26		158	50	150		55		
120	4	40	35	15	123	155	31	122	130	32.5	12	16
	6	63	45	20		160	40	140		42.5		
	10	100	58	26		170	50	155		55		
	16	160	70	30		180	62	175		65		
130	6	63	45	20	134	170	40	145	130	42.5	—	20
	10	100	58	26		180	50	165		55		
	16	160	70	30		190	62	185		65		
140	6	63	45	20	144	180	40	150	130	42.5	16	25
	10	100	58	26		190	50	170		55		
	16	160	70	30		200	62	190		65		
155	6	63	45	20	159	195	40	160	150	42.5	—	32
	10	100	58	26		205	50	178		55		
	16	160	70	30		215	62	198		65		
170	6	63	45	20	174	210	40	170	150	42.5	—	40
	10	100	58	26		220	50	185		55		
	16	160	70	30		230	62	205		65		

Table 12 Dimensions of Retaining Ring, Form J
(Clause 6.6.1 and Fig. 12)
All dimensions in millimetres.

Gooseneck Diameter					Nominal Size of Bearing Assembly Type		
d_1	d_4	d_5	d_{10}	h_1			
					A	B	C
50	52	75	15	40	1.6 and 2	—	—
55	57	85	15	40	—	2.5	—
60	62	90	15	40	2.5	3	—
65	68	95	15	50	—	4	—
70	73	100	19	50	3 and 4	5	—
80	83	110	19	50	5	6	—
90	93	120	19	50	6	8	—
100	103	140	24	60	8	10	—
110	113	150	24	60	10	12	—
120	123	170	24	80	12	16	—
130	134	180	24	80	—	20	—
140	144	190	24	80	16	25	—
155	159	205	28	80	—	32	20
170	174	220	28	80	—	40	25
190	194	240	28	80	—	—	32 and 40
200	204	250	28	80	—	—	50
225	230	280	28	80	—	—	63
250	255	300	35	80	—	—	80
275	280	330	35	80	—	—	100

8 MANUFACTURE

8.1 Manufacture of Components

The components shall be manufactured by casting, forging, flame cutting, profiling, welding and machining as necessary to the dimensions given in Fig. 5 to 13 and Tables 5 to 13, as applicable.

8.2 Manufacture of Goosenecks

Goosenecks may be manufactured by forging, flame cutting or welding. The process of manufacture shall be specified at the time of placing the order. The following code letters shall be used for designation:

Table 13 Dimensions of Retaining Pin, Form K
(Clause 6.6.2 and Fig. 13)
All dimensions in millimetres

d_n	l_4	d_{12}	l_8	m	P	Nominal Size of Bearing Assembly Type		
						A	B	C
12	95	4	82	6.5	2.5	1.6 and 2	2.5	—
	105		92			—		
	110		97			2.5		
	115		102			—		
16	120	4	107	6.5	2.5	3 and 4	5	—
	130		117			5	6	
	140		127			6	8	
	—		—			—	—	
20	165	5	149	8	3	8	10	—
	175		159			10	12	
	195		179			12	16	
	205		189			—	20	
	215		199			16	25	
25	235	6	215	10	4	—	32	20
	250		230			—	40	25
	270		250			—	—	32 and 40
	280		260			—	—	50
	312		292			—	—	63
30	332	6	312	10	4	—	—	80
	362		342			—	—	100

S for manufacturing by forging or flame cutting (by agreement between the manufacturer and the purchaser), and

T for manufacturing by welding.

8.3 Forging

8.3.1 The blanks shall be hand-forged or drop-forged and deburred.

8.3.2 The surface of the finished components shall be free from visible cracks, flaking and lamination.

8.4 Flame Cutting

Where components are profiled to shape by flame cutting,

care shall be taken to ensure that the surfaces are subsequently ground or machined as necessary. Attention shall be paid to the fibre direction of the parent plate or billet.

8.5 Welding

Where components are manufactured by welding the design of the weld shall be such as to ensure adequate penetration.

8.6 Castings

Castings shall be smooth and free from internal and external defects.

8.7 Corners

To avoid stress concentration, stress raising corners shall be well rounded.

8.8 Surfaces

All bearing surfaces shall have a machined finish in accordance with the importance of the connected components, the clearance between the various components, the use and the working conditions of the bearing surfaces.

8.9 Lubrication

Where necessary, adequate provision for lubrication shall be made on all moving parts.

9 DESIGNATION

For reference and ordering purposes, gooseneck bearing assemblies and their components shall be designated as follows.

9.1 Designation of Derrick Booms and Gooseneck Assemblies

The following information shall be given by the purchaser :

- Abbreviated denomination, bearing;
- Number of this standard;
- Type of bearing assembly, code letter (see Table 1);
- Nominal size of bearing assembly (see Table 3);
- Form of lead block holder, code letter (see 6.5 and Table 2);
- Nominal size of lead block holder (see Tables 10 and 11); and

- Method of manufacture of gooseneck, code letter (see 8.2).

Example — A complete gooseneck bearing assembly according to this standard, Type A of nominal size 4, with lead block holder F of nominal size 2, gooseneck forged (S), shall be designated as follows :

Bearing IS 5221 — A 4 F 2 — S

9.2 Designation of Gooseneck Pins

The following information shall be given by the purchaser :

- Denomination; gooseneck pin;
- Number of this standard;
- Form, code letter (see 6.3 and Table 2);
- Nominal size (see 6.3 and Table 3); and
- Method of manufacture (see 8.2).

Example — A gooseneck pin according to this standard, form GA, of nominal size 4, forged (S), shall be designated as follows:

Gooseneck pin IS 5221 — GA 4 — S

9.3 Designation of Bearing Eyes

The following information shall be given by the purchaser:

- Denomination, bearing eye;
- Number of this standard;
- Form code letter (see 6.4 and Table 2); and
- Gooseneck diameter (see Table 8).

Example — A bearing eye according to this standard, form D, for gooseneck diameter of 70 mm, shall be designated as follows:

Bearing eye IS 5221 — D 70

9.4 Designation of Cargo Runner Lead Block Holders

The following information shall be given by the purchaser:

- Abbreviated denomination, lead block holder;
- Number of this standard;
- Form, code letter (see 6.5 and Table 2);
- Gooseneck diameter (see Table 10); and

- e) Nominal size of lead block holder (*see* Table 10 or 11).

Example — A cargo runner lead block holder according to this standard, Form F, for gooseneck diameter of 70 mm, of nominal size 2, shall be designated as follows:

Lead block holder IS 5221 — F 70 — 2

9.5 Designation of Retaining Rings

The following information shall be given by the purchaser:

- Denomination, retaining ring;
- Number of this standard;
- Form, code letter J; and
- Gooseneck diameter (*see* Table 12).

Example — A retaining ring according to this standard, form J for gooseneck diameter 70 mm, shall be designated as follows:

Retaining ring IS 5221 — J 70

9.6 Designation of Retaining Pin

The following information shall be given by the manufacturers:

- Denomination, retaining pin;
- Number of this standard;
- Form, code letter K;
- Diameter of pin, d_{11} (*see* Table 13); and
- Length of pin, l_4 (*see* Table 13).

Example — A retaining pin according to this standard form K of diameter $d_{11} = 16$ mm and length $l_4 = 120$ mm shall be designated as follows:

Retaining pin IS 5221 — K 16 × 120.

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